

REMARKS

This case contains claims 1, 2, 4-6, 8, 11-57, 64-65, 67-69, 86-94, 96-101 with the entry of this Amendment. Claims 1, 21, 28, 33, 38, 42, 47, and 52 have been amended for improved clarity and to better claim the subject matter which Applicants regard as the invention. New claim (claim 101) has been added to better claim the invention. None of the amendments made herein constitutes the addition of new matter

Rejections under 35 U.S.C. § 103:

Claims 1-2, 4-6, 11-57, 64-65, 67-69, 86-94, and 96-100 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Molvig *et al.* (1997) *Proc. Natl. Acad. Sci. USA*, 94:8393-8398. Applicants respectfully traverse this rejection.

Although the Patent Office acknowledges that the content and/or composition of specific metabolites are not determined in the Molvig *et al.* disclosure, it is alleged that these features of the claimed invention must be inherently present because practicing the claimed invention does not require additional steps nor the use of additional method components to achieve the desired effect before the determination of the content or composition or content and composition, of a metabolite is made. It is thus further alleged that the Molvig *et al.* disclosure would have motivated one of ordinary skill in the art to make the claimed invention.

Without acquiescing to this aspect of the rejection and in the interest of advancing the prosecution of this application, claims 1, 21, 28, 33, 38, 42, 47, and 52 have been amended to recite an additional step in the claimed methods. The amended claims specifically recite the methods that include the step of "selecting" a plant having the modified content or composition, or content and composition, in addition to modifying and determining a content and/or composition. Applicants assert that the disclosure of Molvig *et al.* does not suggest the claimed methods of selecting a plant having a certain modified trait, nor would a person of ordinary skill in the art have been motivated by the cited reference to make and use the invention based on the Molvig *et al.*'s disclosure at

the time when the present application was filed. Applicants further emphasize the fact that the combination of steps recited in the amended claims, i.e., the step of modifying a content and/or composition of a specific metabolite in the storage organ, to subsequently determine the modified content and/or composition plus the step of selecting a plant having such modified characteristics make the claimed invention non-obvious over Molvig *et al.* The focus of the Molvig *et al.* reference is to improve the nutritive value of a legume seed such as lupin, particularly to address the deficiencies of these legumes in sulphur amino acids for animal diet. Molvig *et al.* reported that there was not statistically significant change in other amino acids or in total nitrogen (see Abstract). Furthermore, there is no mention or suggestion as to how the content and/or composition of fiber, fatty acid, starch etc. were affected in their studies. Accordingly, a person of ordinary skill in the art would not have derived motivation to make the claimed invention of multi-step methods based on the teachings of Molvig *et al.*

Based on the foregoing, it is submitted that the claimed invention is not *prima facie* obvious over the teachings of Molvig *et al.* Withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

Conclusion

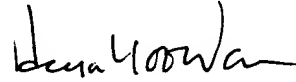
In view of the foregoing amendments and arguments, it is submitted that this case is in condition for allowance and passage to issuance is respectfully requested.

If there are any outstanding issues related to patentability, the courtesy of a telephone interview is requested, and the Examiner is invited to call to arrange a mutually convenient time.

This Amendment is accompanied by a Notice of Appeal, a check in the amount of \$320 as required under 37 C.F.R. 1.17(b) for a large entity, a Petition for Extension of Time (two months), and a check in the amount of \$400 as required under 37 C.F.R. 1.17(a)(2) for a large entity. If the amounts submitted are incorrect, please charge any

deficiency or fee for any further extension of time required, or credit any overpayment to
Deposit Account No. 07-1969.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Heeja Yoo-Warren', written in a cursive style.

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Amended Claims- Version with markings to show changes made.

1. (Three Times Amended) A method of modifying the content or composition, or content and composition, of a metabolite in the storage organ of a plant, said metabolite selected from the group consisting of oil (fatty acid), starch, soluble non-starch polysaccharide, insoluble non-starch polysaccharide, fibre and protein nitrogen, said method comprising:
 - (i) expressing in the storage organ of the plant a chimeric gene comprising a nucleotide sequence encoding a sulphur-rich protein placed operably in connection with a promoter sequence capable of conferring expression in said storage organ; [and]
 - (ii) determining the content or composition, or content and composition, of a metabolite in said storage organ, said metabolite selected from the group consisting of oil (fatty acid), starch, soluble non-starch polysaccharide, insoluble non-starch polysaccharide, fibre and protein nitrogen[, subject to the proviso that the modified metabolites do not consist of only the sulfurous protein content of a seed and/or wherein the content of an amino acid is modified, such modification is no the result of the presence of a naturally or artificially high level of that amino acid in the sulfur-rich protein.] ; and
 - (iii) selecting a plant having a modified content or composition, or content and composition, of said metabolite in the storage organ thereof.
21. (Twice Amended) A method of increasing the protein nitrogen content of seeds of a plant, said method comprising:

- (i) expressing in the seeds of the plant a chimeric gene comprising a nucleotide sequence encoding a sulphur-rich protein placed operably in connection with a promoter sequence capable of conferring expression in said seeds, said nucleotide sequence also positioned upstream of a transcription termination sequence; [and]
 - (ii) determining the level of protein nitrogen in the seeds; and [, subject to the proviso that the sulfurous protein content of the seed alone is not increased.]
 - (iii) selecting a plant having an increased protein nitrogen content in the seeds thereof.
28. (Twice Amended) A method of modifying the fatty acid content of seeds of a plant, said method comprising:
- (i) expressing in the seeds of said plant a chimeric gene that comprises a structural gene sequence encoding sunflower seed albumin (SSA) [SSA] placed upstream of a transcription termination sequence and operably in connection with a promoter sequence capable of conferring expression on said structural gene in the seeds; [and]
 - (ii) determining the level of a fatty acid in the seeds [.] and
 - (iii) selecting a plant having a modified fatty acid content in the seeds thereof.
33. (Twice Amended) A method of modifying the fatty acid composition of seeds of a plant, said method comprising:
- (i) expressing in the seeds of said plant a chimeric gene that comprises a structural gene sequence encoding sunflower seed albumin (SSA) [SSA]

placed upstream of a transcription termination sequence and operably in connection with a promoter sequence capable of conferring expression on said structural gene in the seeds of said plant;[and]

(ii) determining the [level of a] fatty acid composition of [in] the seeds [.]; and

(iii) selecting a plant having a modified fatty acid composition in the seeds thereof.

38. (Twice Amended) A method of decreasing the starch content of seeds of a plant, said method comprising:

(i) expressing in the seeds of said plant a chimeric gene that comprises a structural gene sequence encoding sunflower seed albumin (SSA) [SSA] placed upstream of a transcription termination sequence and operably in connection with a promoter sequence capable of conferring expression on said structural gene in the seeds of said plant; [and]

(ii) determining the starch content of the seeds[.] ; and

(iii) selecting a plant having a decreased starch content in the seeds thereof.

42. (Twice Amended) A method of modifying the amino acid composition of seeds of a plant, said method comprising:

(i) expressing in the seeds of said plant a chimeric gene that comprises a structural gene sequence encoding sunflower seed albumin (SSA) [SSA] placed upstream of a transcription termination sequence and operably in connection with a promoter sequence capable of conferring expression on said structural gene in the seeds of said plant; [and]

- (ii) determining the amino acid composition of the seeds[, subject to the proviso that said modified composition is not the result of the presence of a naturally or artificially high level of that amino acid in a sulfur-rich protein.]; and
 - (iii) selecting a plant having a modified amino acid composition in the seeds thereof.
47. (Twice Amended) A method of modifying the fibre content of seeds of a plant, said method comprising:
- (i) expressing in the seeds of said plant a chimeric gene that comprises a structural gene sequence encoding sunflower seed albumin (SSA) [SSA] placed upstream of a transcription termination sequence and operably in connection with a promoter sequence capable of conferring expression on said structural gene in the seeds of said plant; [and]
 - (ii) determining the fibre content of the seeds[.]; and
 - (iii) selecting a plant having a modified fibre content in the seeds thereof.
52. (Twice Amended) A method of modifying the fibre quality of seeds of a plant, said method [(i)]comprising [the step of]:
- (i) expressing in the seeds of said plant a chimeric gene that comprises a structural gene sequence encoding sunflower seed albumin (SSA) [SSA] placed upstream of a transcription termination sequence and operably in connection with a promoter sequence capable of conferring expression on said structural gene in the seeds of said plant; [and]
 - (ii) determining the fibre quality of the seeds[.]; and

(iii) selecting a plant having a modified fibre quality in the seeds thereof.